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AMERICAN CLASSICAL LIBRARY DEDICATED IN ATHENS

By Prof. R. V. D. Magoffin, President,
Archaeological Institute of America.

The Gennadius Library, or Gennadeion, a magnificent marble building erected in Athens by the American School of Classical Studies to house the library presented four years ago by Dr. Joannes Gennadius, has been dedicated and opened for service. The cermony, which was one of great solemnity, was opened by the formal consecration of the structure by the Greek Archbishop of Athens. Speeches of presentation were made by President Pangalos of Greece, by Henry Smith Pritchett, president of the Carnegie Corporation of New York, which supplied a fund of $250,000 for the erection of the building, and by Dr. Gennadius, donor of the library. The speech of acceptance on behalf of the American School of Classical Studies was made by Prof. Edward Capps of Princeton University.

The Gennadeion is one of the most useful and at the same time one of the most beautiful buildings in the world. It is made in classic columnar style entirely of white Naxian marble. It would have been made from marble from the quarries in Mt. Pentelicus, a few miles from Athens, which supplied most of the marble for those universally admired ancient Greek temples on the Athens Acropolis, but the Pentelic quarries do not supply the beautiful white marble they once did, so recourse was had to the snow white product of the quarries of the Greek island of Naxos. The Gennadeion houses the most complete library in the world in the general Greek field, is to be open to students of all countries on equal terms, but is owned and administered by the American School of Classical Studies at Athens, the oldest of the foreign schools founded by the Archaeological Institute of America.

It is not far from being a romance how this magnificant library and library building came to be under the aegis of a school belonging to the United States of America.

Several years ago Dr. Gennadius, an elderly and wealthy Greek, who for many years had been Minister from Greece to St. James, was on an official visit to this country. At a luncheon in a clun in Washington, D. C., he spoke of his library, and how he had been well advised to bring the most valuable part of it to London before the World War. He deplored the inability of his country to house properly his library; and more than that, he spoke of the uncertain status of the east Mediterranean area, which seemed not to warrant the belief that Greece could be absolutely sure of being able to maintain and protect such a collection against future eventualities.

He thought that perhaps the best solution of the matter would be to present his library to Great Britain and let it be housed in London.

This statement seemed almost a challenge. Several of the men present were stirred to the depths of their being. Among them was Prof. Edward Capps of Princeton, who had been at the head of the American Red Cross in Greece during the War, and later U. S. Minister there, and who also was chairman of the managing committee of the School of Classical Studies at Athens. This seemed to be the chance to further a splendid enterprise under American auspices. The entire matter was presented at the earliest possible moment to the President and Trustees of the Carnegie Corporation of New York. These wise and patriotic gentlemen sensed immediately the significance of the opportunity and appropriated the money necessary to build a marble library worthy of the collection of books which M. Gennadius was ready to bestow. It was a direct answer to his fervent hope, which was to see his books in his native land, worthily housed, and assured of an efficient and safe administration.

PLANTS LIVE FOR MONTHS IN SEALED GLASS BULBS

An array of vegetable Robinson Crusoes, small living plants, each cut completely off from the outside world by being hermetically sealed in an old electric light bulb, is now on display at the building of the National Academy of Sciences and the National Research Council in Washington. Though they have been shut up in their glass prisons for several months, receiving nothing from outside except sunlight and warmth, they thrive and grow, using the same supplies of water and air over and over again.

The system of growing plants in sealed bulbs was invented by Raymond H. Wallace, a young graduate student in the department of botany at Columbia University. It was designed as a demonstration of the ability of green plants to live completely independently, an ability not shared by animals.

The plants, which include several ferns and fern-allies, a small sensitive-plant and a seedling evergreen, are so mounted in the spoonful of soil that is allowed them that they receive a constant but no excessive supply of water from beneath. As water evaporates from their leaves, it is condensed on the walls of the glass bulb and runs down, to be used over again.

The original supply of air imprisoned in the bulb is also used repeatedly, in a slightly more complex cycle. Plants make a double use of air. They take in oxygen and give off carbon dioxid, just as animals do though it was formerly taught that they performed only the reverse process. They do perform a reverse process, taking in carbon dioxid and giving off oxygen. That, however, is not a part of their breathing but a part of the food-making process, wherein by the aid of sunlight they build the carbon and part of the oxygen of the carbon dioxid into starch and sugar, releasing the remainder of the oxygen into the air. Because plants play this double role, Mr. Wallace's green hermits can keep up the game of life indefinitely.

Since they build the carbon dioxid into food, the plants would naturally stop growing when the small original supply of this gas in the sealed up air was exhausted

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Here the green plants receive aid from a host of unseen fellow-prisoners in their bulbs - the bacteria in the soil. These work only one way, eating up the decaying plant material around them with the aid of oxygen from the air, and returning carbon dioxide, which the green plants capture again and once more feed into the unbroken circle of vegetative life.

ANCIENT HEBREWS A MIXED RACE

The Hittites, against whose tribes the Children of Israel warred for the conquest of Palestine, were probably descendants of the same ancestors with the Hebrews according to Dr. George A. Barton of the University of Pennsylvania, who addressed the recent annual meeting of the American Philosophical Society. A branch of the original Hittite stock, a people with high cheekbones and prominent noses, mingled with a Semite foundation to produce the tribe who later became the Chosen People, late evidence indicates.

The riddles of origin and language of the Hittites, long the despair of archeologists, are now rapidly being untangled, Dr. Barton stated.

"Until about forty years ago the Hittites were believed to have been simply a small Palestinian clan like the Hivites and Jebusites;" he said. "Then it was recognized that the Khatti of Assyrian inscriptions and the Kheta of Egyptian inscriptions were Hittites, that certain pictures on rocks in Asia Minor portrayed Hittites, and that certain curious hieroglyphic inscriptions accompanying these were Hitting."

"Two generations of scholars have sought in vain to read this writing. In 1906 the late Professor Winckler discovered in the ruins of a Hittite Palace at Beghazkoi an archive of 2500 or more fragments of tablets, representing between 500 and 1000 tablets written in the Babylonian Cuneiform script, most of which were in the Hittite language. Because Winckler was soon attacked by a lingering illness from which he died, these tablets did not begin to be published until within the last ten years. Now, by the combined efforts of several scholars the language in which the tablets are written is being rapidly mastered and their contents given to the world.

"The majority of the texts are in what ispopularly called Hittite, but which the tablets call Kanish. Counting Sumerian and Akkadian, the language of Babylonia, seven other dialects are represented in the collection. Kanish is a language Indo-European in its structure, but largely non-Indo-European in its vocabulary. The other dialects are all non-Indo-European. What the tablets call Hittite (scholars call it Proto-Hittite to distinguish it from Kanish) is a non-Indo-European language. These non-Indo-European languages are apparently related to Elamite and to dialects which will survive in the Caucasus.

"Probably hieroglyphic Hittite, which is still undeciphered, contains material in these non-Indo European languages. In Mesopotamia Aryans mingled with this early population and gave them such Aryan deities as Mitra, Varuna, Indra, and Nashatya, but were not able to plant among them an Indo-European speech. In Asia Minor, they imposed an Indo-European language (Kanish or later Hittite), but apparently did not plant the worship of Indo-European deities.

"One of these peoples, the Hurri, appears to have spread over Syria and Palestine, where they mingled with Semites to form the Hebrew people. It seems that they gave to the Jews their characteristic features. Another dialect, the Azarva, spoken over western Asia Minor, is revealed to us. It included the Lycian city of Myra, mentioned in Acts, 27:5 from which St. Paul took ship to Rome."

MOSAIC DISEASE GERMS FOUND IN TOMATO PLANT

The mosaic disease of tomatoes, and probably of other plants as well, which annually causes damage aggregating tens of millions of dollars, is caused not by an ultramicroscopic organism, too small to be seen with the most powerful of optical aids, as has hitherto been supposed, but by a germ which though exceedingly tiny can yet be seen if the right technique is used.

This discovery, made by Dr. Sophia Eckerson of the Boyce Thompson Institute for Plant Research, is described in a recent issue of the Botanical Gazette. In the same journal is a discussion of the efforts of Helen A. Purdy, an associate of Dr. Eckerson, to cultivate the organism outside the plant tissues, which failed to sustain the claims made by an earlier worker that this virus could be grown in a test tube.

Dr. Eckerson found in the tissues of diseased tomato leaves swarming little organisms near the lower limit of visibility for even a high-power microscope. Their diameters ranged from two to four twenty-five thousandths of an inch. Later on, larger organisms, about twice the size of those that appeared first, were detected. These creatures were always found in the diseased areas of the leaves, and most of them possessed the power of rapid motion, swimming through the sap with rapid lashes of a whip-like "tail".

Mosaic diseases afflict a wide variety of plants and cause very serious economic losses. They are so called because leaves of the diseased plants lose their green color in angular patches, giving the tissue a pattern suggestive of a mosaic pavement. Many workers have spent years searching for the cause or causes of the disease, as a first step in the development of means for prevention or cure.

STUDIES UNEXPLORED REGION OF SPECTRUM

One of the least known sections of the spectrum has been investigated by Prof. K. T. Compton, well known physicist, and C. H. Thomas of Princeton University.

In a talk before the American Philosophical Society Prof. Compton described the methods they have used to make more accurate measurements of the spectral region that lies between ordinary X-rays and the extreme ultra-violet than have hitherto been possible. Except for a small region between radio and heat waves this is the only part of the spectrum that has not been capable of receiving close and accurate study. Prof. Compton and Mr. Thomas have shown that in this region of very soft X-rays

iron, cobalt, nickel, carbon, copper, and tungsten give out numerous characteristic radiations.

In the other regions of the spectrum, such as the ultra-violet section measured by Prof. R. A. Millikan, the radiations themselves can be more or less directly studied, but these very soft X-rays are so strongly absorbed and so little reflected that workers must resort to very indirect methods for their detection, such as the photo-electric methods described by Prof. Compton.

INTERIOR OF STARS STUDIES

Recent advances in atomic physics have led to a great increase in the understanding of internal conditions in the stars, Dr. Henry Norris Russell, of Princeton, told the National Academy of Sciences at its recent meeting.

"The outstanding problem is to find out where the heat radiated by the stars comes from and in what manner heat is liberated inside the stars," said Dr. Russell. "We now know that inside a star the atoms have their outer parts knocked off, but retain their individuality. And it is possible to calculate at what rate heat should escape from the interior to the surface, and therefore how bright the stars should be, if we know how large and massive a star is and how much denser it is in the interior than at the surface."

Existing evidence, indicates that heat is probably produced by a slow transformation of matter into energy, after the manner first suggested by Einstein, Dr. Russell declared. If all stars were composed of exactly the same material, stars of the same mass would be similar, not only in brightness, but also in size, color, and temperature. This is not a fact, and it follows that some stars must contain more than others of the "active material" which is the source of heat.

"The life history of a star depends upon the proportion of active material in its composition," said Dr. Russell. "If, as seems probable, this originally forms the larger part of the star's mass, a star of large mass will start as a red giant, gradually become hotter and whiter, and finally cool down and end as a faint dwarf. Stars of smaller mass may begin their careers as dwarf stars without ever passing through the giant stage."

The presence of a great ice cap lowers the temperature of a region about 50 degrees.

A recent invention is a rubber frame to protect baby's milk bottle from breaking if it falls.

NEW MIXER SAVES TIME IN BREAD MAKING

Great time saving in the process of bread baking is claimed for a new bread mixer which has been developed in the department of milling industry at the Kansas State Agricultural College. C. O. Swanson and E. B. Working of that department maintain that mechanical action on dough can be made to take the place of the usual fermentation previous to putting the bread in pans.

With the aid of the departments of machine design and shop practice they have invented a bread mixer which they claim breaks down the gluten in dough and modifies its texture to such an extent that it does nothave to be "put to rise" before being placed in pans. Since the mixing takes only seven minutes and panary fermentation about forty minutes, the time saving is considerable. The bread made by such a process is said to be quite as good in quality as that baked in the ordinary way.

Just what application of this process will be made in the baking industry is not yet determined. Further experiments along this line are being conducted at the agricultural college.

OVER THIRD THIS YEAR'S CHICKS TO DIE

If poultry raisers want to rear their baby chicks to be healthy grown-up hens and roosters they must give them clean quarters and proper food. From 35 to 40 per cent. of the chicks hatched this spring and every spring die while still in their chickhood, according to Prof. Robert Graham, of the department of ahimal pathology and hygiene at the University of Illinois.

"No medicine has been found that will measure up to the important task of curing all poultry diseases", Prof. Graham said. "Nor has there been any medicine found that poultrymen can rely upon to cure a small percentage of poultry diseases unless the owner has first taken the steps necessary to prevent the diseases."

Infectious disease is the most important factor in thehigh death rate of chicks but improper feeding and housing are close seconds, he maintains.

"Chicken raisers would have more success in fighting poultry diseases if the money they usually spend in buying patent medicines andother remedies of questionable value were used to provide more adequate housing and yarding, " he declared.

A low power, long range radio set is being designed for the Byrd expedition to the North Pole.

The belief that bats destroy mosquitoes in large quantities is not demonstrated in actual practice, according to the U. S. Department of Agriculture.

RATS LEARN HOW TO GROW UP FASTER

Can the ambition of children to "grow up" faster, and of all of us to be big and tall, ever be realized by a future generation? Perhaps, if human beings can learn the trick that seems to have been mastered by rats in the laboratory of Dr. Thomas B. Osborne and Dr. Lafayette B. Mendel at the Connecticut Agricultural Experiment Station. A breeding stock of experimental animals under their observation has "speeded up" the growing process by nearly a third during the past half-generation, the two scientists informed the National Academy of Sciencesatits recent meeting.

"In the course of the past fifteen or more years we have had an opportunity to secure records of the rate of growth of several thousand rats under controllable conditions with respect to diet and environment," they said. "The animals have been bred from laboratory stock without any introduction of 'new blood' within the past ten years. The stock diet during this period has presumably remained essentially the same so that changes in the average rate of growth may perhaps be properly attributable to the effects of selective breeding in the attempt to secure vigorous animals for experimental use. A noticeable increase in the average rate of growth has in fact resulted. For example, the average time required by male rats to grow from two ounces to seven ounces body weight has gradually decreased; it was approximately 94 days in 1912; 89 days in 1913; 70 days in 1919; 67 days in 1925.

"From time to time we have observed instances of exceptionally rapid growth under conditions of diet and environment seemingly the same as those to which animals exhibiting the average rate of growth were subjected. This in itself indicates a possibility of largely accelerated growth that might be secured more generally if the underlying causes could be correctly ascertained. An outstanding illustration is afforded by rats - selected, it must be remembered, from our stock colony - that have grown from a body weight of two ounces to seven ounces in less than 25 days, in contrast with approximately 70 days usually required by comparable animals.

"It need not be assumed that food itself determines the rate of growth; it merely gives the natural growth impulse fair play in a way that may not always have been recognized hitherto. The maximum size of animals growing at these accelerated rates is in general not unduly large although frequently it has been decidedly larger than the average."

In some European cities there are police officers who speak the international language Esperanto and who wear badges showing that they are Esperanto interpreters.

Japanese children have raised considerable money for Red Cross enterprises by catching locusts, which are popular as food, and by destroying insect pests in rice fields.

HUMAN BODY GROWS IN THREE SPURTS

Though a baby, or a small boy, may "grow like a weed", his growth does not go on at a steady, unvarying rate, but in three grand spurts, which overlap each other, making the "growth curve" which scientists plot to measure the rate into a very complex affair. Dr. Charles B. Davenport, of the Carnegie Institution of Washington, told of his studies of this problem at the annual meeting of the National Academy of Sciences.

The first period of maximum growth rate is right at the time of birth. The baby grows fast, as everybody knows, but the rate of growth falls off for several years. Then it starts to speed up again, and in the case of boys at least, it reaches a climax at about eight years - that embarrassing time when a fellow's knees simply will not stay inside their proper garments. A second slowing-down follows, and then a second speeding up, the rate of growth reaching its maximum at fifteen - the "all hands and feet" period, when the youth is "shooting out of his shoes".

The three growth-spurts, Dr. Davenport stated, correspond closely with periods of greatest activity of some of the internal glands. The first and second periods ofgrowth correspond with activity on the part of thyroid and pituitary glands, respectively, whose secretions are known to be growth-promoting. The third cycle, said Dr. Davenport, is a fundamental one, underlying the others, andprobably represents some more general growth stimulus exerted from the time of the first existence of life until growth stops altogether.

MIND OF HUMAN BEING ORGANIZED BEFORE BIRTH

Our important attitudes toward life are all determined by the time we are born into this world, Dr. Steward Paton, lecturer on neuro-biology at Princeton University, told the American Philosophical Society at its meeting recently.

"The development of certain structures of the body enables the embryo to catch the rate and rhythm of the Dance of Life," Dr. Paton declared. "And within certain limits the embryo is able to modify its reactions to meet demands of its environment. Successes and failures in adapting to the restricted but urgent requirements of embryonic existence prepare the way for successes and failures of life after birth. During this period we have clear indications of what the individual's attitudes will be in the face of critical situations, while intimation is given of what the temperamental qualities are upon which adult character and the entire personality are based.

The old fundamental urges to live, to grow, and to perpetuate the race are expressed by the organism even before birth, Dr. Paton stated.

"Different embryos express their wish to live, move, and have their being in different ways - no two embryos are exactly alike in their reactions," he said. "The rhythm, the tempo of responses to stimuli show wide individual variations."

The centers forregulating the oldest, primitive, and most urgent wishes are in

the oldest part of the nervous system, the medulla oblongata, Dr. Paton told the society. During the embryonic stage of existence the complicated machinery which provides for inhibitions is developed, thus giving the organism the power of preferential action. In addition to providing for inhibitions, in these early stages of development, arrangements are also made for accelerating and increasing the strength of impulses. The embryo must early learn the speed and tempo at which its life can be satisfactorily regulated.

In conclusion Dr. Paton said: "It is a marvelous comment upon our lack of foresight and interest in finding reasonable solutions for human problems that so little attention has been devoted to investigating the nature and organization of the really fundamental processes shaping our personalities."

KILLS ANIMALS WITH NOISES

A "death-noise" instead of a "death-ray", was the phenomenon discussed recently before the National Academy of Sciences by Prof. R. A. Wood and Alfred L. Loomis, of the Johns Hopkins University. The "death-noise" would have been inaudible to human ears, but it consisted of sound waves just the same, and it killed small fishes and other aquatic animals in vessels of water, in less than a minute.

The two researchers generated exceedingly high-frequency sound waves by means of electrical apparatus. The waves were produced at a rate of from 100,000 to 400,000 to the second; the upper limit of audibility to human ears is between 20,000 and 30,000. If a beam of these sound waves is directed toward the surface of the water, Prof. Wood stated, the surface is heaped up in a mound. The vibrations heat the water, a rise of nearly ten degrees Fahrenheit in one minute having been recorded.

SCHOOL CHILDREN SHOULD BE EXAMINED FOR DEAFNESS

Less than fifty per cent. of children of school age have normal hearing, according to a statement made by Dr. Horace S. Newhart, of Minneapolis.

In a paper delivered before the section of the American Medical Association on diseases of the ear, nose and throat, he declared that the impairment of hearing was due in most cases to defects that could be easily corrected. He stressed strongly the necessity of regular examination of the ears of school children as a preventive measure to keep down the prevalence of deafness of the future.

WEIGHS STARS WITH STOP WATCH

Methods of measuring and weighing stars so distant that their light takes hundreds of years to reach us, with the aid of a stop watch, were described to the National Academy of Sciences by Prof. Joel Stebbins, director of the Washburn Observatory of the University of Wisconsin.

"Observations with the spectroscope reveal motions of certain stars which can be explained by their having large companions or planets," said Prof. Stebbins. "The periods of revolution of many of these attendant bodies are very short, even as small as one or two days. By choosing the proper time for light measurements, it is found that among the cases known in advance to be favorable fully one-half of these double systems present eclipses as viewed from the earth.

"A study of the variation of the light of a star during an eclipse makes it possible to calculate the diameter of both the bright star and its dark or faint companion. As an illustration, it is noted that two stars moving in space parallel to the stars of the Big Dipper, and presumably belonging to that system, have each been found to have attending satellites. Each of the bright bodies is twice as heavy and gives one hundred times as much light as our sun, so that the latter would make only a mediocre planet for any star of the Big Dipper.

"As these observations are taken with the photo-electric dell, the same instrument that is used for transmission of pictures over telephone wires, and the light of stars is measured by timing their effect on a delicate electrometer, attached at the eye-end of the telescope, it is literally true that we can measure and weigh a star by means of a stop-watch."

REPTILES AND AMPHIBIANS. By Thomas Barbour. Boston: Houghton Mifflin Company. 1926. $3.50.

Reptiles and amphibians have been left in relative neglect by writers on natural history, possibly because they are neither good to eat, like fish, nor pretty, like birds, nor full of suggestions of close kinship to man, like the mammals. Yet these two great groups of animals are not only highly interesting because of their own curious lives, but they occupy a strategic position in the evolutionary geneolog-- ical diagram. Dr. Barbour therefore merits the thanks of all nature lovers and students of zoology for his condensed yetadequate account of these two important divisions of the animal kingdom.

An investigation at the U. S. Bureau of Standards has shown that tire treads containing 25 per cent. of reclaimed rubber gave an average service of about 7,000 miles of road travel.

Although the great Swedish naturalist Linnaeus was not a believer in evolution he placed men and monkeys in the same natural order, which he called the Primates or Foremost Animals.